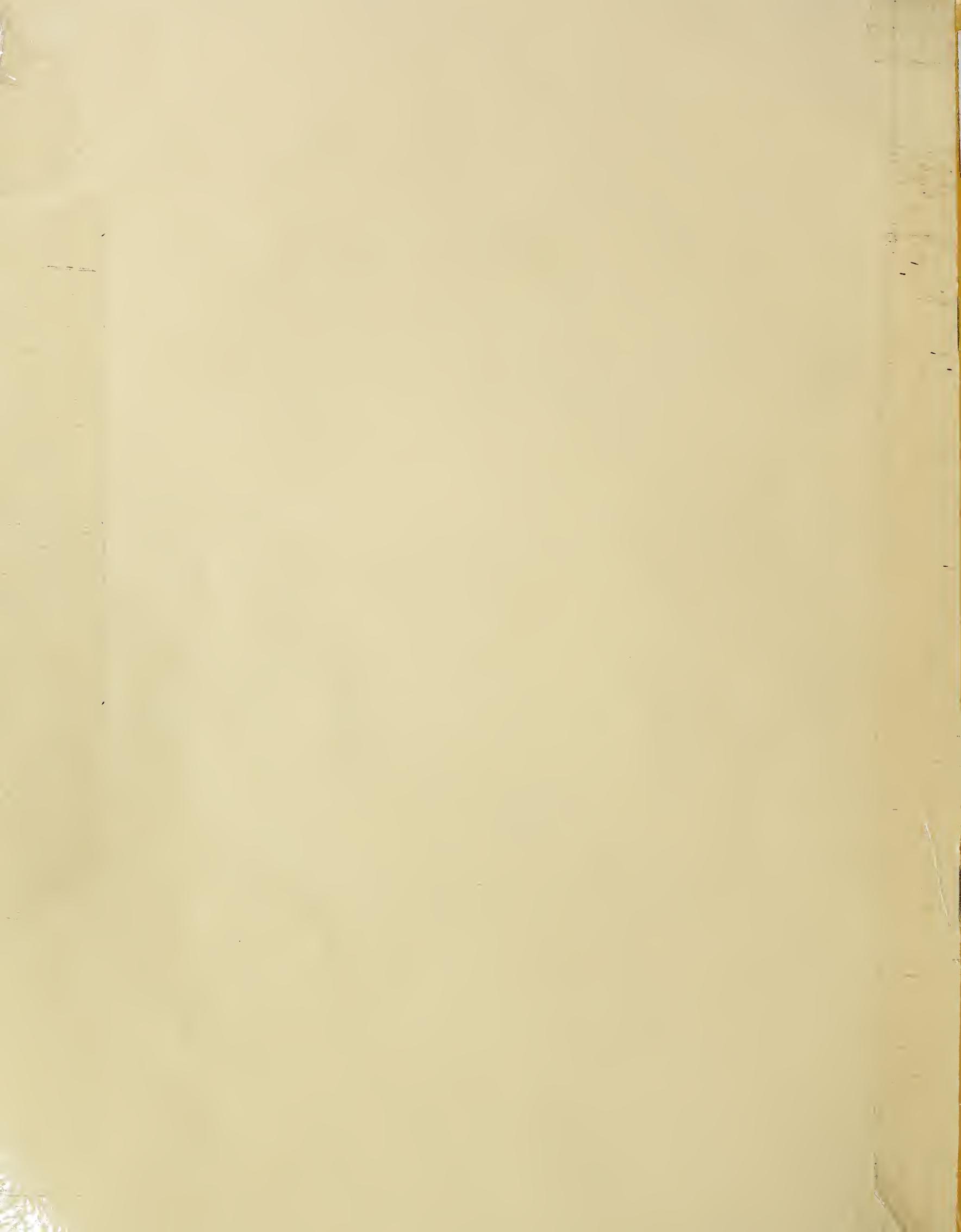


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**You can
protect
your home
from
termites**

U.S. Department of Agriculture
Forest Service

This publication is part of the U.S. Forest Service information program designed to make forestry research on protection of wood in use more understandable and usable for practitioners and laymen.

The information and illustrations in this booklet relate research findings at the Southern Forest Experiment Station and the Forest Products Laboratory to practical problems of wood protection.

By Michael I. Haverty,
Southern Forest Experiment Station,
Gulfport, Mississippi



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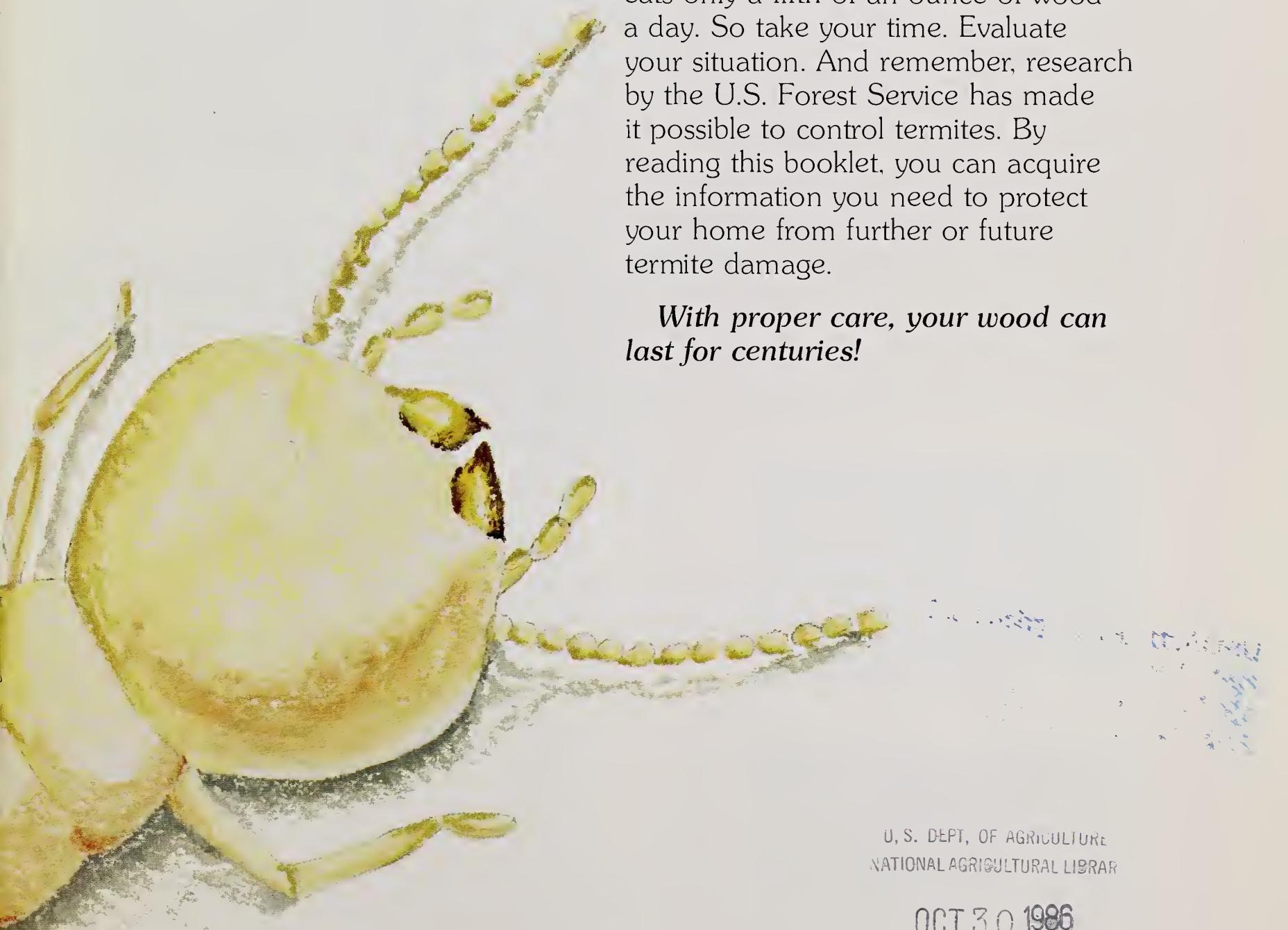
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HAVE TERMITES? DON'T PANIC!



Except for a fire alarm or a natural catastrophe, nothing strikes more fear into the heart of a homeowner than the sudden discovery of a termite infestation. Concern is justified, yes, but not panic. Thankfully, termites are slow eaters. Even a mature, well-established colony of 60,000 workers eats only a fifth of an ounce of wood a day. So take your time. Evaluate your situation. And remember, research by the U.S. Forest Service has made it possible to control termites. By reading this booklet, you can acquire the information you need to protect your home from further or future termite damage.

With proper care, your wood can last for centuries!

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Types of termites

Termites are picky eaters.

Their main diet is wood cellulose. Because of this, termites play an important role in forest ecology, recycling dead wood on the forest floor and enriching the soil. In fact, if it weren't for termites and decay fungi, much of the world's forest area would be an impenetrable mass of fallen trees and stumps.

In other words, they were here first! We have moved into their territory and deprived them of fallen trees and branches. But they thrive just as well on smoothly planed lumber and other manufactured wood and paper products in your home as they do on raw tree trunks. Leave a convenient entryway and guess who's coming to dinner!

These dead logs and branches on the forest floor will soon disappear due to termite and decay action.

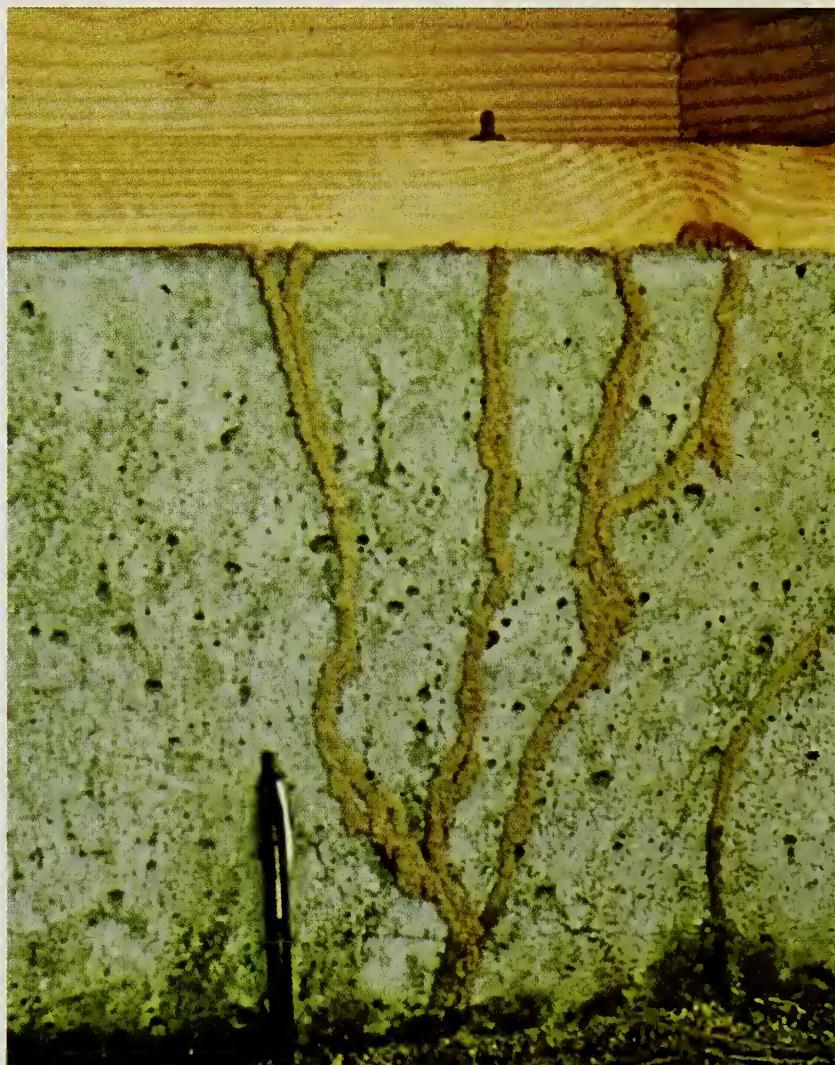


Typical suburban home in once forested area.

Subterranean termites, the most widespread of all, are found in every state except Alaska. Years ago, their damage was concentrated in the southern half of the United States. But with more and more homes having central heating, subterranean termite damage is becoming common in the northern states.

The most important thing to remember about subterranean termites is that they need warm air and moist conditions to live. To stay moist, they must maintain a direct link with the ground unless leaking pipes or roof provide them with a nice wet home. Therefore, don't worry about termites

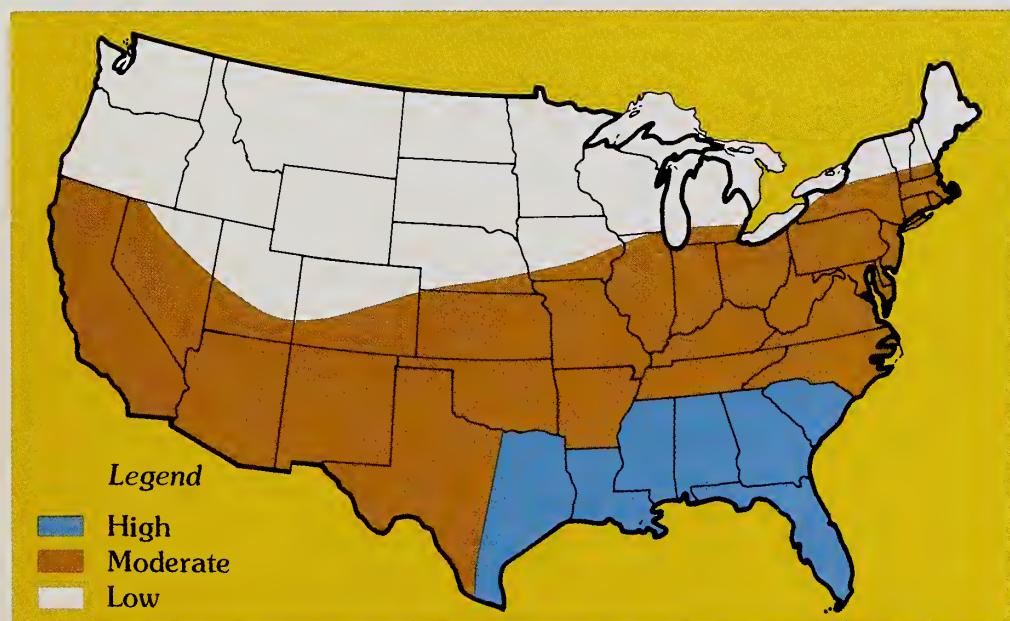
Earth tube of the subterranean termite.



already in the wood. Cut off their access to the moisture and termites in the wood will die.

These particular termites have a one-two punch. As they eat their way through wood, the structural fiber of the wood is weakened. But they cause much more damage than this. They bring moist soil with them to build protective tubes and tunnels, and this leads to attack by wood fungi. Subterranean termite damage is almost always accompanied by wood decay, which weakens the wood further.

Drywood termites are important mainly to homeowners along the southern rim of the United States, especially in Florida, Arizona, California, and Hawaii. Where they occur, however, they pose a serious problem because they need no contact with the soil. They enter the home under shingles, through cracks in windows or eaves, or through screened vents in the attic. Some are brought into a home in infested furniture. Fumigation is the most effective way to eliminate them, once they've gained entry.



Incidence of subterranean termite damage in the United States.

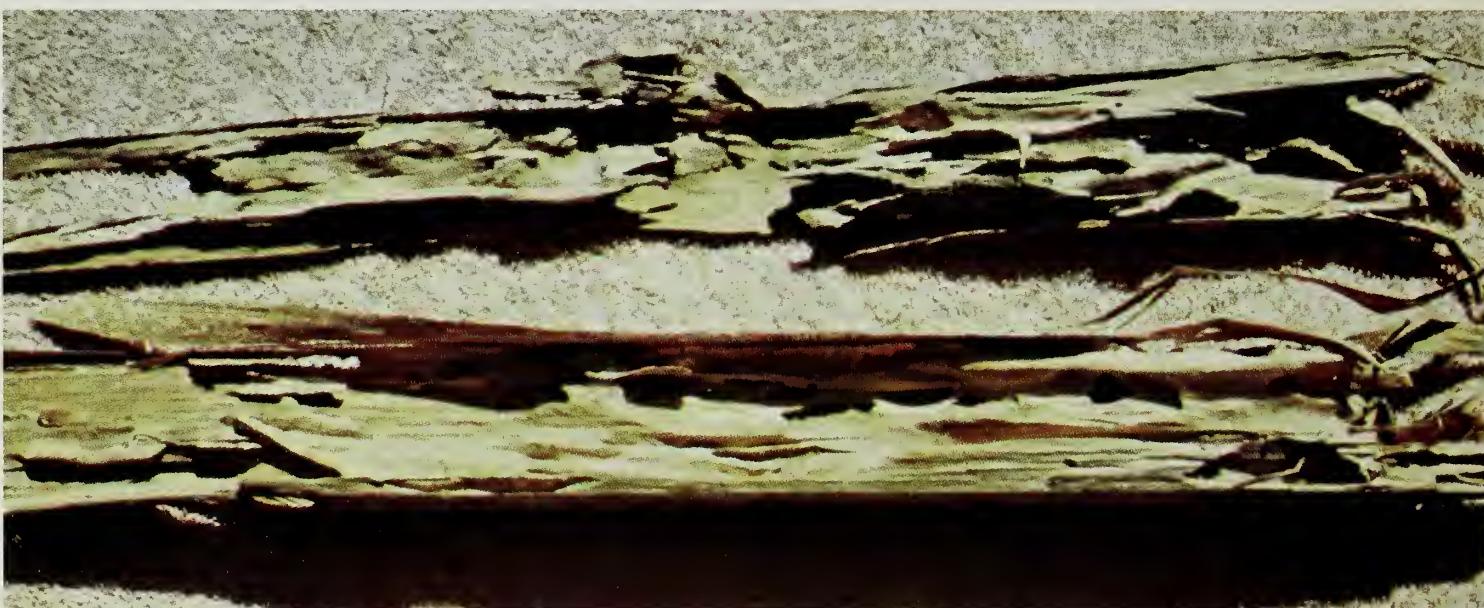


Incidence of drywood termite damage in the United States.

Four obvious signs of a termite infestation



Earth tubes between the soil and some wooden structure under the house is a sure sign of subterranean termites. These tubes can go up the foundation wall, along plumbing, or directly from the soil to the wood.



Hollow wood underneath a finished surface. Wood underneath will have earthfilled galleries, but termites are not always present.



Piles of fecal pellets on the outside of the finished wood are a sure sign of drywood termite attack. Pellets look like sawdust; but upon close examination they appear very symmetrical with six grooves along the side.



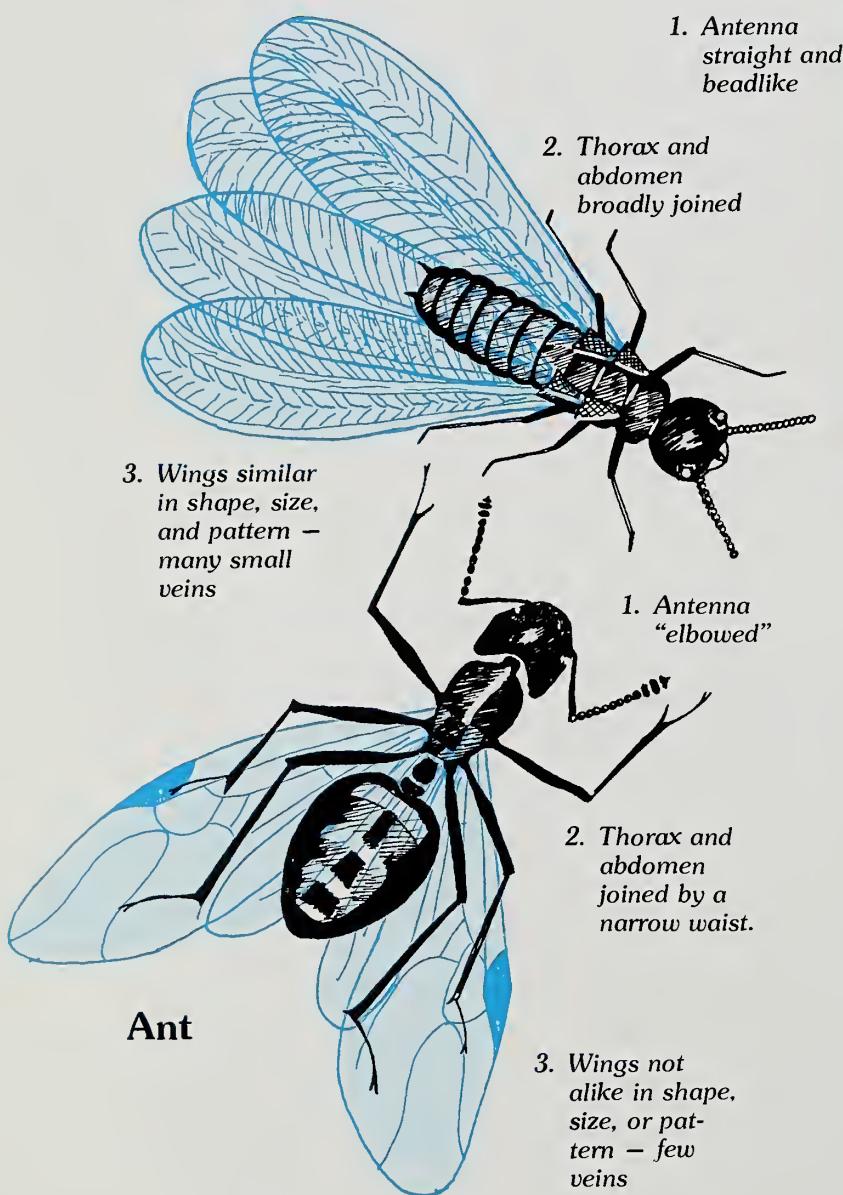
Termite wings on the window sill or the appearance of winged termites in and around the home. Soon after flying, termites lose their wings, so the only evidence they leave is scattered wings.

EGGS — The tiny termite egg is almost transparent. During the incubation period the egg is groomed and tended by workers. The larva hatches from the egg and is about the same size.

How to distinguish between flying termites and flying ants

Termites, like ants, live in colonies, which are usually headed by a king and queen. These you will seldom see except in the flying stage. The workers, however, are responsible for the damage done by termites. They are the individuals that seek wood out and remove it from your home in very small quantities every day. Soldiers are responsible for the protection of the colony from ants and other insect enemies.

Termite



KING AND QUEEN — In a young colony, the king and queen are the actively reproducing termites in the colony. Their only function is the production of eggs.



When the short flight is finished, the swarmers drop their wings and the males begin a frenzied search for compatible mates. Because the swarmers are exposed and are prey to predator birds and insects, very few ever survive to establish a new colony.



When nymphs reach maturity and become swarmers (kings and queens), they all leave the colony at about the same time, usually in spring or fall. The swarmers fly very poorly and most of them flutter for only a few yards before falling to the ground.

THE LIFE CYCLE OF A TERMITE COLONY



NYMPH — The nymph is the most vital individual to the perpetuation of the species since it may become a king or queen of a new colony. Physically, it is longer than the other termites. Before it leaves the nest to breed, its body turns black and all four wings extend to about twice its body length.

LARVA — During early larval stages, all young termites "look alike," and all are fed by attendant workers. The larvae can develop into one of four castes.



WORKER — This termite is the one which forages from the nest to the wood supply and returns with food for the colony.

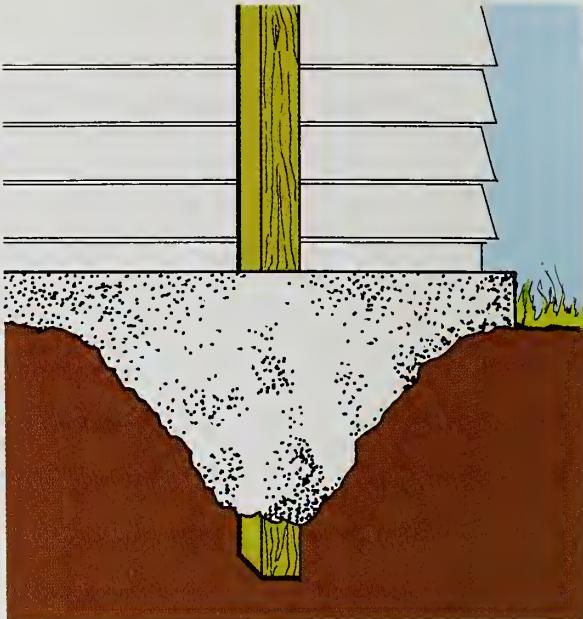
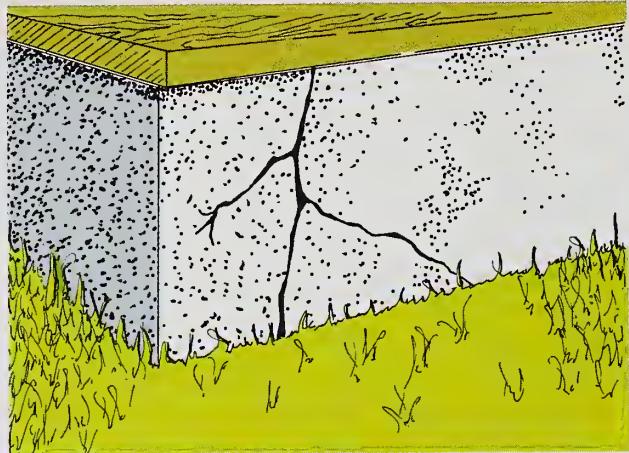


SOLDIER — Defender of the colony, the soldier termite develops a long, armored head and mandibles capable of cutting an enemy ant in half. The soldier also sounds the alarm by banging his head against the side of a tunnel.



SECONDARY REPRODUCTIVE — This caste is capable of reproducing and perpetuating the life of the colony, should the king or queen die. In very large colonies these reproducives produce offspring in addition to that of the king and queen.

15 MOST FREQUENT DANGER AREAS



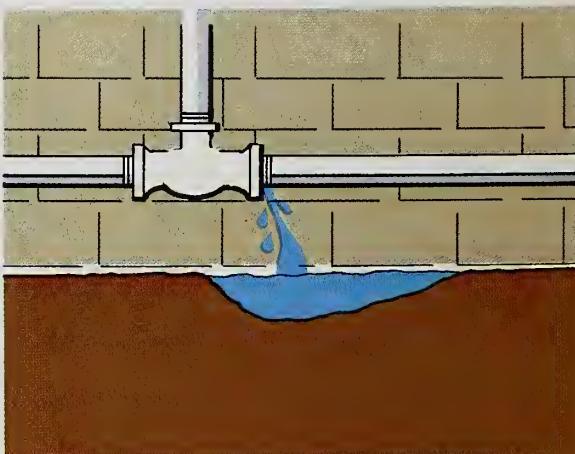
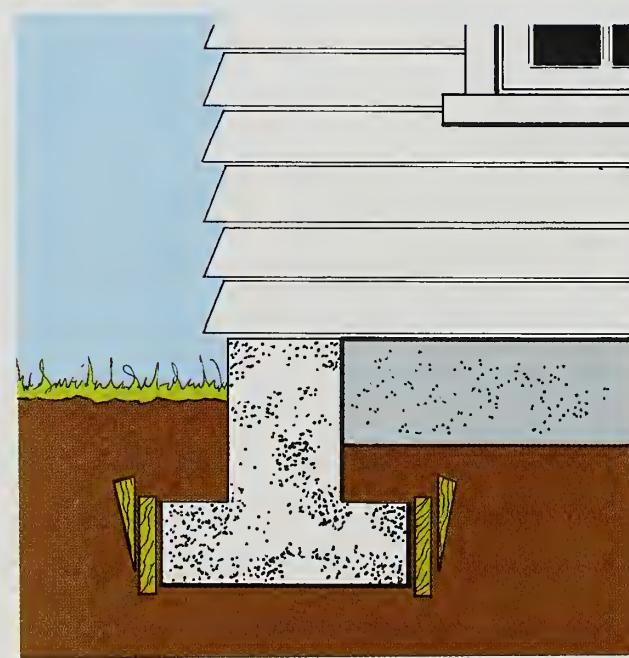
1/ Cracks in concrete foundations allow termites hidden access from soil to sill.

2/ Posts set in concrete may give a false sense of security. What if they are in contact with the soil underneath?

3/ Concrete porches with earthfill underneath pose a special hazard. Often, wood framing members are in contact with the fill.

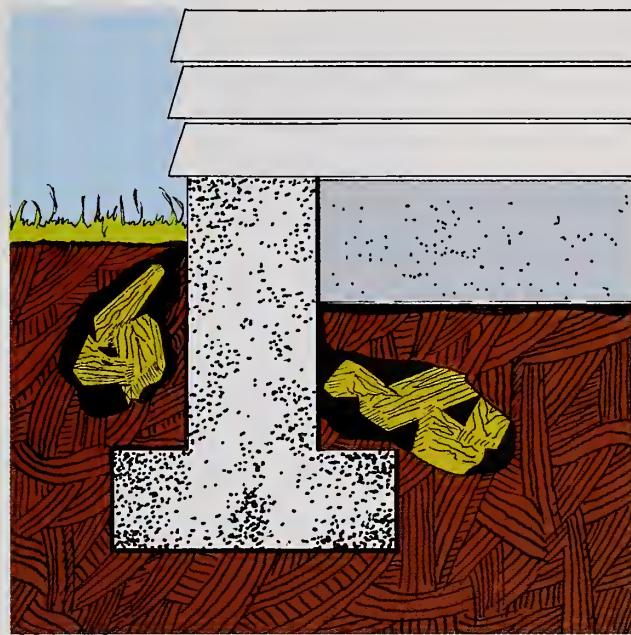
5/ Leaking pipes and dripping faucets keep the soil moist. Excess irrigation has the same effect. Downspouts should carry water away from the building.

4/ Form boards left in place contribute to termite food supply.



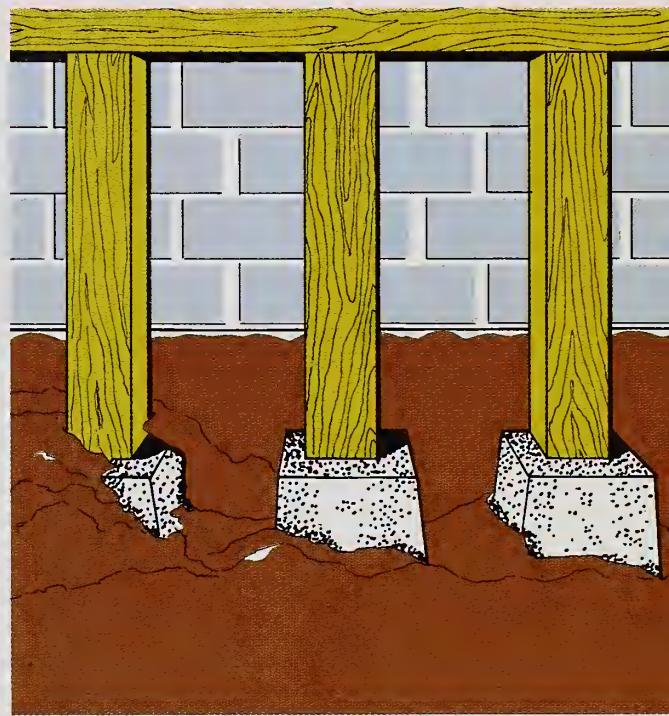


6/ Shrubbery which blocks the air flow through vents causes the air underneath house to remain warm and moist — an ideal climate for termites!



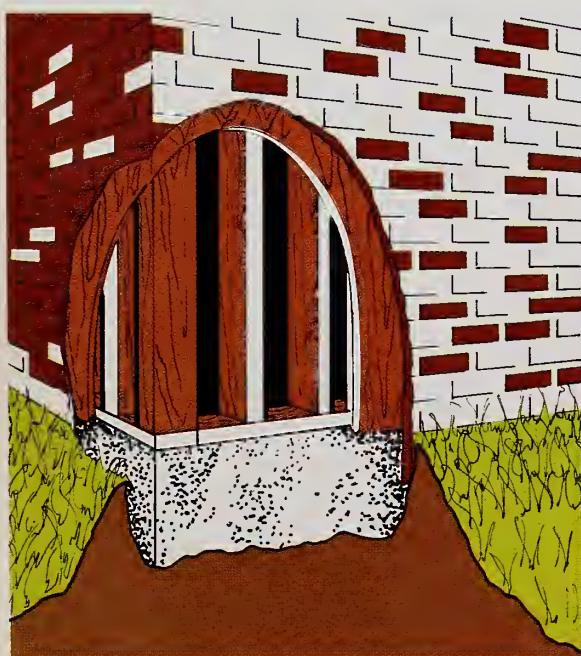
7/ Debris under house supports termite colony until population becomes large enough to attack the house itself.

8/ Foundation walls or footings which are too low, permit wood to contact the soil.



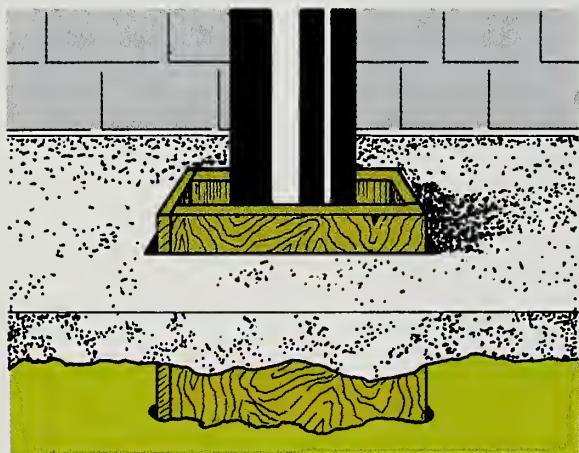
9/ Stucco or brick veneer carried down over concrete foundation permits hidden entrance between exterior and foundation, if bond fails.

10/ Planters built against the foundation allow direct access to unprotected veneer, siding, or cracked stucco.



MOST FREQUENT DANGER AREAS

continued

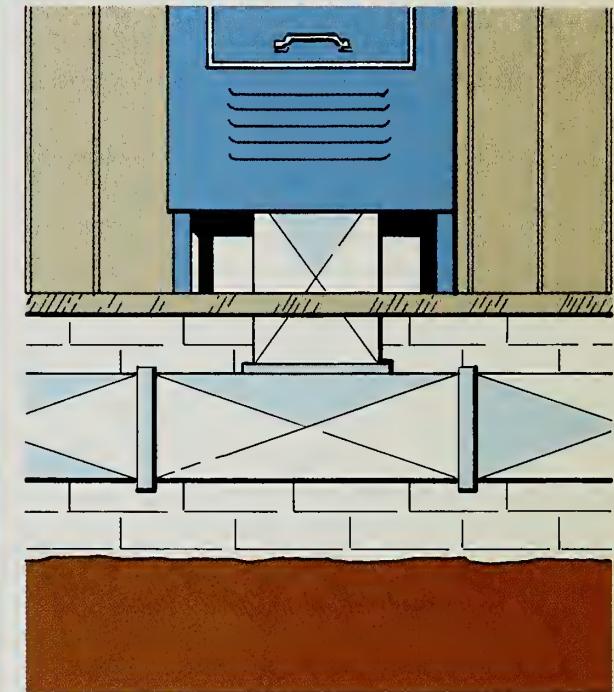


11/ Forms left in hole of slab where bathtub drain enters building provide a direct route to inner walls.

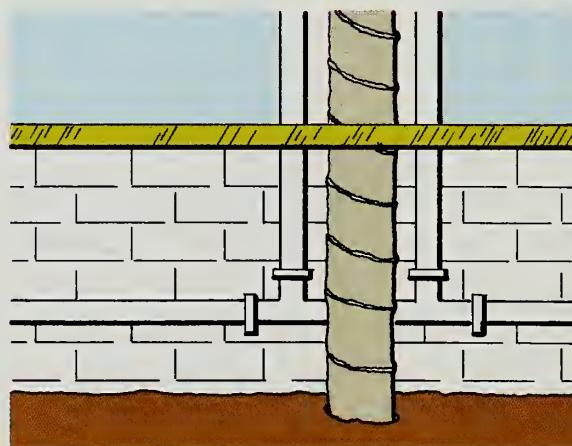
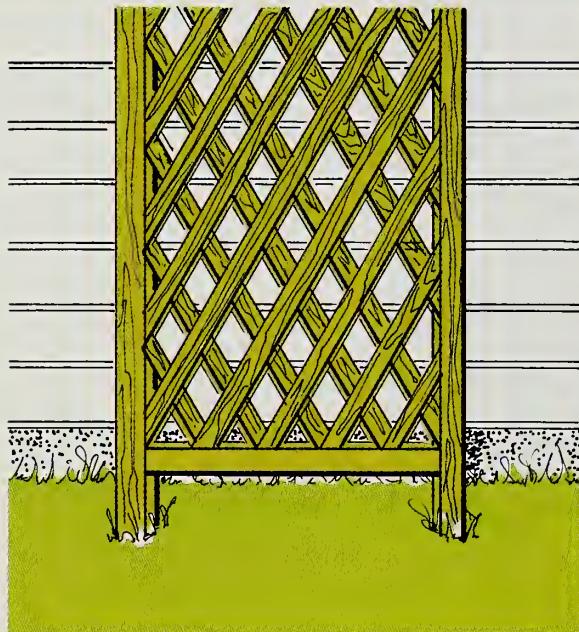


12/ Porch steps in contact with untreated soil literally offer termites a stairway to your home.

13/ Heating unit accelerates termite development by maintaining warm soil for colony on a year-round basis.



15/ In a house that was once termite-free, do-it-yourselfers can provide access to termites by building trellises and other adornments which provide a direct link from soil to wood.



Prevention is the best cure

As already seen, most of the danger areas can be rendered harmless by any homeowner simply by moving soil as far away as possible from any wooden member of the house. But careful! Chances are that, before your house was built, the builder treated the soil underneath and adjacent to the slab or pier foundations with a termite toxicant. If done properly, the treatment will prevent termites from entering through or around the foundation for many years. In fact, research by the U. S. Forest Service has revealed four chemicals — aldrin, chlordane, dieldrin and heptachlor — which create a termite-proof barrier for at least 25 years. None have failed yet! So if you transport much soil from the immediate vicinity of foundation piers or a concrete slab foundation, the remaining soil should be chemically treated again.

If you Find or Suspect Termites call a responsible pest control operator. As said before, don't panic. Take your time and get two or three cost estimates from established firms. Check references of the operator and beware of firms that:

- quote a price based on gallonage of material used (get estimate of total price for the job).
- profess to have a secret formula or ingredient for termite control. Chemicals tested by the U. S. Forest Service are the best known to man and are not expensive.
- have no listed phone number.
- show up without an invitation and use evidence of termites in trees as an excuse to inspect the house.
- also want to trim trees and do general repair work as part of the contract.



Before the foundation is laid, soil always should be pretreated with insecticide where subterranean termites are a serious hazard. Chemicals recommended by the U. S. Forest Service should last for 25 years or more.

What homeowners ask about termites

Scientists at the Wood Products Insect Laboratory in Gulfport, Mississippi are among the nation's leading authorities on the biological habits of termites and methods of termite prevention and control. Here are their answers to some of the questions they receive from around the world:

• How can I tell if the damage to my door jamb is caused by termites or by decay?

Strip away the outer surface of the board. If termites have been there, you'll find that the softer springwood has been eaten while the harder summerwood is intact, giving a honeycomb effect. Termites also leave light brown specks of excrement and earth in their path. When decayed, the wood is soft to the touch and, of course, there's no earth or tunnels inside.

• Are we having a termite epidemic? They seem to be increasing in number.

Not really. In recent years, however, their destructiveness northward has increased. This has resulted mainly from the increased use of central heating in homes and the tremendous expansion of suburban homes into areas which are naturally infested with termites.

• I plan to build my house on a concrete slab. Isn't this the safest from termite attack?

Actually, it's one of the most susceptible types of construction used today. The homeowner has a false sense of security. With time most slabs will crack. Termites can enter through tiny cracks in the concrete, over the edge of the slab, or easier yet, through openings around plumbing. Be sure the soil under your house is treated with the right type of chemical before pouring the slab and that the pest control operator uses the proper amount of the chemical! If you do, you should have protection for many years.

• I have termite shields on each of my foundation piers. Don't these prevent termites from entering the house?

Not necessarily. It is possible for termites to build their tubes over or through the metal shield, especially if the shield has been damaged or improperly installed. One advantage of the shield is that, if termites have bridged over the metal, the tubes can be easily spotted.

• I have dug around the foundation of my house and haven't seen any termites in the soil. Am I safe?

On the basis of your inspection, no. Chances of actually seeing termites in the soil are very slight. Look for their tubes and possible entryways where soil touches wood or any other connections between the house and the ground.

• I prefer not to use chemicals. Is there any biological control for termites?

Not yet. We and other scientists are searching for biological controls but none have been found to be very effective so far. However, all four recommended chemicals are registered for use against termites at this time. The U. S. Forest Service has shown that these chemicals have moved only a few inches laterally or downward through sandy loam soil after two decades of heavy rainfall. Thus, the risk of contaminating water resources is minimal. Moreover, most of the insecticide is under the building and not exposed to the environment. In the event that any or all of these insecticides become unavailable to pest control operators, the Forest Service is continuing its research effort to find effective substitutes.

Termite study plots near Gulfport, Mississippi — part of the Forest Service's continuing research to find better protective agents.



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For over 75 years, the Forest Service through its 8 regional research stations has overseen forestry research programs aimed at protecting, managing, using, and replenishing our forest resources.

Besides such research, the Forest Service cooperates with state agencies and private forest owners to stimulate proper management practices and to protect the 440 million acres of their forests against fires, insects, and diseases.

The Forest Service also manages 187 million acres of public land, including 154 National Forests and 18 National Grasslands in 43 states and Puerto Rico. Each National Forest resource — timber, water, forage, fish and wildlife, and recreation — is managed to produce a harmonious environment along with tangible benefits for all of America's people.

Acknowledgments

Appreciation is extended to the following for illustrations and photography used in this brochure:

National Pest Control Association

Photograph of earth tubes, page 4.

Terminix International, Inc.

Photograph of hollow wood, page 4.

Photographs, page 5.

The nine illustrations depicting the life cycle of a termite colony, pages 6 and 7.

Velsicol Chemical Corporation

Photographs of dead logs and suburban home, page 2.

Louisiana Tourist Development Commission

Photograph of Madewood Plantation, back cover.



With proper care your wood can last for centuries.